Web application for Intensity of Erosion and Outflow

Name of the River Basin: Shirindareh S11-1

Country: Iran, Islamic Republic of

Year: 2019

GPS coordinates, latitude and longitude with Google Maps: 37.79,57.14

INPUT DATA

Geometric characteristics of the river basins

F = 47.13 km^2 (Surface area of the drainage basin)

O = 32.76 km (Length of the watershed)

Fv = 34.14 km^2 (Surface area of greater portion of the drainage basin)

Fm = 12.99 km^2 (Surface area of smaller portion of the drainage basin)

Lv = 14.43 km (Natural length of main water course)

Lb = 6.38 km (Length of the drainage basin measured by a series of paraller lines)

Topograpfic characteristics of the river basins

Contour line length - Liz [km]: ["4.58 ","15.15 ","17.19 ","22.89 ","27.80 ","25.58 ","23.14 ","12.22 ","10.18 "]

The area between the two neighboring contour lines - f [km^2]: ["1.62 ","6.66 ","6.25 ","7.03 ","6.48 ","6.36 ","6.03 ","3.05 ","3.30 ","0.35 "]

h0 = 800 m (Altitude of the initial contour)

▲h = 100 m (Equidistance)

Hmin = 747 (Lowest altitude in the drainage basin)

Hmax = 1690 (Highest altitude in the draigane basin

Hydrological characteristics of the river basins

ΣL = 91.96 km (The total length of the main watercourse with tributaries of 1st and 2nd class)

Lm = 10.83 km (The shortest distance between the fountain (head and mouth))

Water permeability

fp = 0.05 (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

fpp = 0.05 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.9 (Part of the surface area of the drainage basin which is composed of the rocks of poor water permeability (heavy clay, compact eruptive))

Land use

fs = 0.25310 (Part of the surface area of the drainage basin under the forest)

ft = 0.74690 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.00000 (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

Meteorological data

hb = 32.35 mm (Level of torrent rain)

Up (years) = 100

to = 12.70 °C (Average annual air temperature)

Hgod = 288.8 mm (Average annual quantity of precipitation)

Erosion coefficients

Y = 1.14783 (Types of soil structures and allied types)

0 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

74.93 % (Decomposed limestone and marls)

19.65 % (Serpentines, red sand stones, flishe deposits)

0 % (Podzols and parapodzols, decomposed schist)

0 % (Solid and Schist limestone, Terra Rosa and Humic soil)

0 % (Brown forest soils and Mountain soils)

5.42 % (Epieugleysol and Marshlands)

0 % (Good structured Chernozems and alluvial well-structured deposits)

0 % (Bare, compact igneous)

Xa = 0.60356 (Planning of the drainage basin, rate of drainage basin regulation)

0 % (Bare lands)

0 % (Plough-lands)

3.56 % (Orchards and vineyards)

71.13 % (Mountain pastures)

0 % (Meadows)

25.31 % (Degraded forests)

0 % (Well-constituted forests)

ϕ = 0.36435 (Numerical coefficient of visible and clearly pointed processes of soil erosion)

0 % (Depth erosion)

2.1 % (80% of the river basin under rill and gully erosion)

10.35 % (50% of the river basin under rill and gully erosion)

0 % (100% of the river basin under surface erosion)

0 % (100% of the river basin under surface erosion, without visible furrows, ravines and land slides)

0 % (50% of the river basin under surface erosion)

87.55 % (20% of the river basin under surface erosion)

0 % (There are smaller slides in the watercourse beds)

0 % (The river basin mostly under plough-land)

0 % (The river basin under forests and perennial vegetation)

INPUT DATA

A = 0.4427027027027 (Coefficient of the river basin form)

m = 0.59294263525372 (Coefficient of the watershed development)

B = 7.3871473354232 km (Average river basin width)

a = 0.89751750477403 ((A)symmetry of the river basin)

G = 1.9511988117972 (Density of the river network of the basin)

K = 1.3324099722992 (Coefficient of the river basin tortuousness)

H_{sr} = 1143.4080203692 m (Average river basin altitude)

D = 396.4080203692 m (Average elevation difference of the river basin)

I_{sr} = 33.679185232336 % (Average river basin decline)

H_{leb} = 943 m (The height of the local erosion base of the river basin)

E_r = 114.56117520121 (Coefficient of the erosion energy of the river basins relief)

S_1 = 0.955 (Coefficient of the regions permeability)

S_2 = 0.74938 (Coefficient of the vegetation cover)

W = 0.42536027694844 m (Analytical presentation of the water retention in inflow)

$2gDF^{1/2}$ = 605.43766830286 m km s^{-1} (Energetic potential of water flow during torrent rains)

Q_{max} = 81.591329709216 m^3 s^{-1} (Maximal outflow from the river basin)

T = 1.170469991072 (Temperature coefficient of the region)

Z = 0.65446478690662 (Coefficient of the river basin erosion)

W_{god} = 26499.288401171 m^3 god^{-1} (Production of erosion material in the river basin

R_u = 0.29501879964205 (Coefficient of the deposit retention)

G_{god} = 7817.788255482 m^3 god^{-1} (Real soil losses)

G_{god} km^{-2} = 165.87711129815 m^3 km^{-2} god^{-1} (Real soil losses per km^2)